Reviewer's report

Title: Neglect-like characteristics of developmental disregard in children with cerebral palsy revealed by event related potentials

Version: 2 Date: 24 September 2014

Reviewer: Rod C Scott

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Thank you for asking me to review this manuscript. The authors present behavioral and ERP data on children with hemiplegic cerebral palsy, half of whom display developmental disregard. They show that children with DD are less able to perform a go-nogo task and that this is associated with differences in ERP data collected from midline electrodes. Although this manuscript is of potential interest there are several issues that need to be dealt with

Major Compulsory Revisions

1. The main issue for this reviewer relates to the biological underpinnings of the ERP data. The authors seem to be arguing that DD is related to cognitive control of movement during the task and that the ERP provides insight into that process. As I understand it the authors are suggesting that in the absence of DD neural circuits are formed and that those circuits lead to changes in ERP parameters. However, there is something about the initial injury that leads to the DD in the first place and therefore it seems possible that the ERP is simply a reflection of that underlying brain injury and is entirely unrelated to subsequent brain development. It is not possible to establish whether this is true as there are no data on the nature, site, severity etc of the injury that s leading to the hemiplegia. Without this information it is extremely difficult to establish what the ERP data are saying about the biology of DD

2. It would be helpful to know what the N1, P2 etc components are measuring in biological terms i.e. what is it in the structure or function of the brain that makes the waveforms. With this information it will be easier to make inferences on the biological relevance of the data presented.

3. The second major issue relates to the age of the participants. The age range is from 5-12 years and it is possible that there is maturation of the ERP across that age range. This should be explored. In addition, if DD is a function of cognitive development then one might expect that the children with DD show little change over time whilst those without DD show a marked change. It appears that these data are available and could be analyzed using regression methods.

4. It is interesting that the behavioral and ERP data show a bilateral deficit despite an apparently unilateral lesion. This suggests that in children with DD the ‘normal’ side of the brain is either itself injured in which case the child would have bilateral DD, or that the abnormal hemisphere is somehow influencing the normal side in a way that leads to a decrease in performance. This needs to be
addressed in the manuscript.

5. It is very difficult to see the different lines in Fig 2. I wonder whether it is possible to either separate out the groups or to use lines that are more distinguishable.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.